

What is claimed is:

1. A cassette for electrophoresis gels comprising:

a first planar wall member having inner and outer surfaces, top and bottom edges,
5 and lateral edges;

a second planar wall member having inner and outer surfaces, top and back edges,
and lateral edges, wherein the first and second wall members are oriented generally parallel to
each other and such that the inner wall of the first wall member is proximate to the inner wall of
the second wall member;

10 spacing means disposed between the inner walls of the first and second wall
members and adapted to provide a space for an electrophoresis gel between the inner walls of the
first and second wall members, wherein the cassette has an interior which is defined by the space
between the first wall member and the second wall member; and

locking means adapted to prevent locking engagement of the first and second wall
members unless the inner surface of the first wall member and the inner surface of the second
wall member are substantially parallel to each other and are separated by a predetermined
distance and, when the first and second wall members are in locked engagement, to substantially
prevent any movement of the wall members away from such locked engagement.

20 2. The cassette according to claim 1 wherein the spacing means comprise at least
one primary spacing element located on an inner surface of at least one wall member.

3. The cassette according to claim 2 wherein the spacing means comprise at least
one primary spacing element located proximate to each lateral edge of at least one wall member.

25 4. The cassette according to claim 1 wherein the spacing means comprise a plurality
of ridges on the inner surface of the first wall member spaced apart from each other, located
proximate to each of the lateral edges and extending upwardly from the inner surface, and a
plurality of ridges on the inner surface of the second wall member spaced apart from each other,
30 located proximate to each of the lateral sides and extending upwardly from the inner surface,
wherein the ridges extending from each lateral edge of the inner surface of the first wall member

are adapted to fit within a corresponding space between the ridges extending from each corresponding lateral edge of the inner surface of the second wall member to align and interconnect the first wall member with the second wall member in such a manner that the inner surface of the first wall member and the inner surface of the second wall member are generally parallel to each other.

5 5. The cassette according to claim 4 wherein the plurality of ridges on the first wall member and plurality of ridges on the second wall member extend along substantially the entire length of the lateral edges of the wall members.

10 6. The cassette according to claim 2 wherein the spacing means further comprise at least one secondary spacing element adapted to maintain the space between the wall members.

15 7. The cassette according to claim 6 wherein the at least one secondary spacing element is located proximate to the upper part of the interior of the cassette.

20 8. The cassette according to claim 6 wherein the at least one secondary spacing element comprises at least one boss located on a selected one of the inner surface of the first wall member and the inner surface of the second wall member and at least one recess on the other of inner surface of the first wall member and the inner surface of the second wall member corresponding to the at least one boss on the other wall member such that the at least one boss of the one wall member matingly engages with the at least one recess when the first and second wall members are in locked engagement.

25 9. The cassette according to claim 1 wherein the locking means are located on the lateral edges of one of the wall members.

30 10. The cassette according to claim 1 wherein the locking means comprises at least one selectively-shaped protrusion extending from each lateral edge of a selected one of the first wall member and the second wall member and at least one selectively-shaped recess proximate to each lateral edge of the other of the first wall member and the second wall member

corresponding to the at least one protrusion on the other wall member such that the at least one protrusion of one wall member matingly engages with the at least one recess of the other wall member when the first and second wall members are in locked engagement.

5 11. The cassette according to claim 1 wherein the locking means comprises at least one L-shaped protrusion extending from each lateral edge of a selected one of the first wall member and the second wall member and at least one selectively-shaped surface proximate to each lateral edge of the other of the first wall member and the second wall member
10 corresponding to the at least one L-shaped protrusion on the other wall member such that the at least one L-shaped protrusion of the one wall member fixedly engages with the at least one surface of the other wall member when the first and second wall members are in locked engagement.

15 12. The cassette according to claim 1 wherein the locking means form an integral part of the wall members.

20 13. The cassette according to claim 1 wherein the cassette further comprises a plurality of dividing ribs on a selected one of the inner surface of the first wall member and the inner surface of the second wall member extending from near the top edge of the wall member generally parallel to the lateral edges to a rib base end and being adapted to protrude into the interior of the cassette when the first and second wall members are in locked engagement.

25 14. The cassette according to claim 11 wherein the ribs are adapted to subdivide at least the top end of the interior into a plurality of generally parallel channels adapted to receive a well-forming spacer when the first and second wall members are in locked engagement.

 15. The cassette according to claim 14 wherein the well-forming spacer is a comb.

30 16. The cassette according to claim 14 wherein the ribs extend across the interior of the cassette.

17. The cassette according to claim 16 wherein the other of the inner surface of the first wall member and the inner surface of the second wall member have a plurality of grooves corresponding to the plurality of ribs on the other wall member such that at least a portion of the plurality of ribs on the one wall member are located within the plurality of grooves on the other wall member when the first and second wall members are in locked engagement.

18. The cassette according to claim 14 wherein the ribs extend only partially across the interior of the cassette when the first and second wall members are in locked engagement.

19. The cassette according to claim 14 wherein each rib is substantially equidistant from each adjacent rib.

20. A cassette according to claim 14 wherein the cassette further comprises an electrophoresis gel within the interior of the cassette, a plurality of gel fingers within the electrophoresis gel extending into the channels, and a plurality of wells which correspond with the plurality of gel fingers, said wells being positioned above said gel fingers and within said channels.

21. A cassette for electrophoresis gels comprising:
a first planar wall member having inner and outer surfaces, top and bottom edges, and lateral edges;

a second planar wall member having inner and outer surfaces, top and back edges, and lateral edges, wherein the first and second wall members are oriented generally parallel to each other and such that the inner wall of the first wall member is proximate to the inner wall of the second wall member;

spacing means disposed between the inner walls of the first and second wall members and adapted to provide a space for an electrophoresis gel between the inner walls of the first and second wall members, wherein the cassette has an interior which is defined by the space between the first wall member and the second wall member;

locking means adapted to prevent locking engagement of the first and second wall members unless the inner surface of the first wall member and the inner surface of the second

wall member are substantially parallel to each other and are separated by a predetermined distance and, when the first and second wall members are in locked engagement, to substantially prevent any movement of the wall members away from such locked engagement;

positioning means adapted to position a removable buffer chamber on the upper
5 end of the cassette; and

a removable buffer chamber adapted to be positioned on the upper end of the cassette.

22. The cassette according to claim 21 wherein the positioning means comprise at
10 least one prong extending from at least one lateral side of at least one of the wall members above the upper end of the cassette.

23. The cassette according to claim 22 wherein the buffer chamber is comprised of a
base having opposing side walls and opposing end walls attached thereto to form a buffer
15 receiving chamber and which is adapted to be sealingly engaged to the upper end of the cassette.

24. The cassette according to claim 23 wherein at least one of the opposing end walls
of the buffer chamber comprises a selectively shaped recess corresponding to the at least one
prong extending from at least one of the lateral sides of at least one of the wall members and is
20 adapted to matingly engage with the at least one prong.

25. A cassette for electrophoresis gels comprising:

a first planar wall member having inner and outer surfaces, top and bottom edges,
and lateral edges;

25 a second planar wall member having inner and outer surfaces, top and back edges,
and lateral edges, wherein the first and second wall members are oriented generally parallel to
each other and such that the inner wall of the first wall member is proximate to the inner wall of
the second wall member;

spacing means disposed between the inner walls of the first and second wall
30 members and adapted to provide a space for an electrophoresis gel between the inner walls of the

first and second wall members, wherein the cassette has an interior which is defined by the space between the first wall member and the second wall member;

locking means adapted to prevent locking engagement of the first and second wall members unless the inner surface of the first wall member and the inner surface of the second wall member are substantially parallel to each other and are separated by a predetermined distance and, when the first and second wall members are in locked engagement, to substantially prevent any movement of the wall members away from such locked engagement;

an electrophoresis gel material within the interior of the cassette, wherein the gel comprises at least two gel fingers, separated from each other, and located proximate to the upper end of the gel,

at least two wells located above the at least two gel fingers, wherein one of the wells is larger than the other well; and

a removable plug located in the smaller of the wells.

26. The cassette according to claim 25 wherein the gel fingers are separated by a narrow wall and wherein the wall is at least partially formed by the gel material.

27. The cassette according to claim 25 wherein the wells are separated by a narrow finger and wherein the finger is at least partially formed by the gel material.

28. A method of preparing a pre-cast electrophoresis gel comprising:
inserting at least one spacer into the top of a cassette for electrophoresis gels, the cassette comprising

a first planar wall member having inner and outer surfaces, top and bottom edges, and lateral edges;

a second planar wall member having inner and outer surfaces, top and back edges, and lateral edges, wherein the first and second wall members are oriented generally parallel to each other and such that the inner wall of the first wall member is proximate to the inner wall of the second wall member;

spacing means disposed between the inner walls of the first and second wall members and adapted to provide a space for an electrophoresis gel between the inner walls of the first and second wall members, wherein the cassette has an interior which is defined by the space between the first wall member and the second wall member; and

locking means adapted to prevent locking engagement of the first and second wall members unless the inner surface of the first wall member and the inner surface of the second wall member are substantially parallel to each other and are separated by a predetermined distance and, when the first and second wall members are in locked engagement, to substantially prevent any movement of the wall members away from such locked engagement;

providing a gel-forming material into the interior of the cassette;

allowing the gel-forming material to form a gel within the interior of the cassette;

and

removing the spacer from the cassette.

29. A method of preparing a pre-cast electrophoresis gel comprising:

inserting at least one spacer into the top of a cassette for electrophoresis gels, the

cassette comprising

a first planar wall member having inner and outer surfaces, top and bottom edges, and lateral edges;

a second planar wall member having inner and outer surfaces, top and back edges, and lateral edges, wherein the first and second wall members are oriented generally parallel to each other and such that the inner wall of the first wall member is proximate to the inner wall of the second wall member;

spacing means disposed between the inner walls of the first and second wall members and adapted to provide a space for an electrophoresis gel between the inner walls of the first and second wall

members, wherein the cassette has an interior which is defined by the space between the first wall member and the second wall member; and

locking means adapted to prevent locking engagement of the first and second wall members unless the inner surface of the first wall member and the inner surface of the second wall member are substantially parallel to each other and are separated by a predetermined distance and, when the first and second wall members are in locked engagement, to substantially prevent any movement of the wall members away from such locked engagement,

wherein the spacer comprises a protrusion projecting from the side of the spacer proximate the interior of the cassette, wherein such protrusion defines two wells within the interior of the cassette, and wherein one of the wells is larger than the other well;

providing a gel-forming material into the interior of the cassette;

allowing the gel-forming material to form a gel within the interior of the cassette;

removing the spacer from the cassette; and

inserting a removable plug in the smaller well.